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EXAMINER

GROSS, KENNETH A

ART UNIT	PAPER NUMBER
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2122

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Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/939,122

Applicant(s)

SOKOLOV ET AL.

Examiner

Kenneth A Gross

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6-8 and 10-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-8 and 10-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6 and 10-15 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, Claim 6 appears to be dependent on Claim 5, and Claim 10 appears to be dependent on Claim 9, however, Claims 5 and 9 have been cancelled. It is not known whether Claims 6 and 10-12 have also been cancelled. If not, an amendment is necessary to clear up the dependency issues of these Claims. For the purposes of this action, Claims 6 and 10 are interpreted to be dependent on Claims 1 and 7, respectively.

In regard to Claim 13, Claim 13 recites “determining, Java Bytecode verification” and “generating a Java macro instruction, Java Bytecode verification”. It is unclear from this language why the term “Java Bytecode verification” is included. In the Remarks/Arguments section of the current amendment, the applicant states that the steps of determining and generating occur during Java Bytecode verification, so perhaps, these should read “determining, during Java Bytecode verification” and “generating a Java macro instruction, during Java Bytecode verification”. These limitations will be interpreted as such.

Claims 11, 12, 14, and 15 are rejected for being dependent on a rejected parent claim.

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blandy et al. (U.S. Patent Number 6,412,108) in view of Borgerson et al. (U.S. Patent Number 4,199,811).

In regard to Claim 1, Blandy teaches: (a) reading a stream of Java bytecode instructions (Column 6, lines 31-39); (b) determining whether two or more Java bytecode instructions in said Java bytecode stream can be represented by one instruction (Column 5, lines 46-48); (c) generating a Java macro instruction that represents said two or more Java bytecode instructions when said determining determines that two or more Java bytecode instructions in said Java bytecode stream can be represented by one instruction (Column 5, lines 46-61); (d) wherein said Java macro instruction is suitable for execution by a Java virtual machine, and (e) wherein, when executed, said Java macro instruction can operate to perform one or more operations that are performed by said two or more Java bytecode instructions (Column 5, lines 58-61). Blandy does not teach generating an internal representation of said Java macro instruction in a pair of streams that collectively represent an internal representation of said stream of Java bytecode instructions in said Java virtual machine. Borgerson, however, does teach representing a macro instruction as a pair of streams (Column 66, lines 40-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of reading, determining, and generating wherein said Java macro instruction is suitable for execution by a

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Java virtual machine, and wherein, when executed, said Java macro instruction can operate to perform one or more operations that are performed by said two or more Java bytecode instructions, as taught by Blandy, wherein the method further includes generating an internal representation of said Java macro instruction in a pair of streams that collectively represent an internal representation of said stream of Java bytecode instructions in said Java virtual machine as taught by Borgerson, since this allows multiple processors to process the macro instruction.

In regard to Claim 2, for a specific rejection of the limitations of this Claim, see the action mailed on December 23<sup>rd</sup>, 2003.

5. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blandy et al. (U.S. Patent Number 6,412,108) in view of Borgerson et al. (U.S. Patent Number 4,199,811) and further in view of Nilsen et al. (U.S. Patent Number 6,081,665).

In regard to Claim 3, Blandy and Borgerson teach the method of Claim 1, but do not teach that the determining step occurs during Java bytecode verification. Nilsen, however, does teach performing inlining optimizations during bytecode verification through a component called a ROMizer (Column 63, line 64 to Column 64, line 5). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of Claim 1, as taught by Blandy and Borgerson, where the determining step occurs during Java bytecode verification, since this allows bytecode transformations to optimize bytecode.

Claim 17 contains limitations that have been previously addressed in Claim 3, and Claim 17 is rejected for the same reasons as Claim 3.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blandy et al. (U.S. Patent Number 6,412,108) in view of Borgerson et al. (U.S. Patent Number 4,199,811) and

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further in view of "Programming Models" by Stefano Tommesani, 2001, Source:

<http://www.tommesani.com/ProgrammingModels.com> (hereinafter Tommesani).

In regard to Claim 6, for a specific rejection of the limitations of this Claim, see the action mailed on December 23<sup>rd</sup>, 2003.

7. Claims 7, 13, 14, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blandy et al. (U.S. Patent Number 6,412,108) in view of Nilsen et al. (U.S. Patent Number 6,081,665).

In regard to Claim 7, Blandy teaches: (a) reading a stream of Java bytecode instructions (Column 6, lines 31-39); (b) determining whether two or more Java bytecode instructions in said Java bytecode stream can be represented by one instruction (Column 5, lines 46-48); (c) generating a Java macro instruction that represents said two or more Java bytecode instructions when said determining determines that two or more Java bytecode instructions in said Java bytecode stream can be represented by one instruction (Column 5, lines 46-61); (d) wherein said Java macro instruction is suitable for execution by a Java virtual machine, and (e) wherein, when executed, said Java macro instruction can operate to perform one or more operations that are performed by said two or more Java bytecode instructions (Column 5, lines 58-61). Although Blandy does not specifically teach counting the number of times a sequence of two or more Java bytecode instructions appears in said instruction stream, Blandy does teach performing an optimization of a sequence of instructions occur "very frequently" (Column 5, lines 46). In order to determine sequences of instructions that occur frequently, it would be obvious to count the number of times the sequence of instructions in the instruction stream to determine whether or not the sequence is to be optimized. Blandy does not teach that the counting, determining, and

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generating steps occur during bytecode verification. Nilsen, however, does teach performing inlining optimizations during bytecode verification through a component called a ROMizer (Column 63, line 64 to Column 64, line 5). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the reading, counting, determining, and generating steps, wherein said Java macro instruction is suitable for execution by a Java virtual machine, and wherein, when executed, said Java macro instruction can operate to perform one or more operations that are performed by said two or more Java bytecode instructions, as taught by Blandy, where the counting, determining, and generating steps occur during bytecode verification as taught by Nilsen, since this allows bytecode transformations to optimize bytecode.

In regard to Claim 13, Blandy teaches: (a) reading a stream of Java bytecode instructions (Column 6, lines 31-39) during Java bytecode verification (Column 4, lines 10-14, 39-42, and 48-53); (b) determining whether two or more Java bytecode instructions in said Java bytecode stream can be represented by one instruction (Column 5, lines 46-48); (c) generating a Java macro instruction that represents said two or more Java bytecode instructions when said determining determines that two or more Java bytecode instructions in said Java bytecode stream can be represented by one instruction (Column 5, lines 46-61); (d) wherein said Java macro instruction is suitable for execution by a Java virtual machine, and (e) wherein, when executed, said Java macro instruction can operate to perform one or more operations that are performed by said two or more Java bytecode instructions (Column 5, lines 58-61). Blandy does not teach that the determining and generating steps occur during bytecode verification. Nilsen, however, does teach performing inlining optimizations during bytecode verification through a component called

a ROMizer (Column 63, line 64 to Column 64, line 5). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of reading, determining, and generating, as taught by Blandy, wherein said Java macro instruction is suitable for execution by a Java virtual machine, and wherein, when executed, said Java macro instruction can operate to perform one or more operations that are performed by said two or more Java bytecode instructions, as taught by Blandy, where the determining and generating steps occur during bytecode verification, as taught by Nilsen, since this allows bytecode transformations to optimize bytecode.

In regard to Claim 14, for a specific rejection of the limitations of this Claim, see the action mailed on December 23<sup>rd</sup>, 2003.

Claim 16 is a system Claim that corresponds with Claim 13, and Claim 16 is rejected for the same reasons as Claim 13, where Blandy teaches a system for carrying out said method of Claim 13 (Figure 1).

Claim 18 is a system Claim that corresponds with Claim 2, and Claim 18 is rejected for the same reasons as Claim 2, where Blandy teaches a system for carrying out said method of Claim 13 (Figure 1).

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blandy et al. (U.S. Patent Number 6,412,108) in view of Borgerson et al. (U.S. Patent Number 4,199,811) and further in view of Bagley et al. (U.S. Publication Number 2002/0170043).

In regard to Claim 15, for a specific rejection of the limitations of this Claim, see the action mailed on December 23<sup>rd</sup>, 2003.



9. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blandy et al. (U.S. Patent Number 6,412,108) in view of Nilsen et al. (U.S. Patent Number 6,081,665) and further in view of Bagley et al. (U.S. Publication Number 2002/0170043).

In regard to Claims 8 and 10, for specific rejections of the limitations of these Claims, see the action mailed on December 23<sup>rd</sup>, 2003.

10. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blandy et al. (U.S. Patent Number 6,412,108) in view of Nilsen et al. (U.S. Patent Number 6,081,665) and further in view of Bagley et al. (U.S. Publication Number 2002/0170043) and "Programming Models" by Stefano Tommesani, 2001, Source: <http://www.tommesani.com/ProgrammingModels.com> (hereinafter Tommesani).

In regard to Claims 11 and 12, for specific rejections of the limitations of these Claims, see the action mailed on December 23<sup>rd</sup>, 2003.

### ***Response to Arguments***

11. Applicant's arguments filed March 23<sup>rd</sup>, 2004 have been fully considered but they are not persuasive.

The applicant argues on Page 9, Paragraph 2 that an SISD computer does not teach generating an internal representation of a Java macro instruction in a pair of streams in a Java virtual machine, as taught in the newly amended claims 1 and 16. However, new art has been introduced, and a new rejection of these Claims appear above. Furthermore, it should be noted that the Tommesani reference could be interpreted to represent *any* instruction as a pair of streams, even a macro instruction in a Java virtual machine.

***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A Gross whose telephone number is (703) 305-0542. The examiner can normally be reached on Mon-Fri 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q Dam can be reached on (703) 305-4552. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KAG



TUAN DAM  
SUPERVISORY PATENT EXAMINER